

## Declass Review by NIMA / DoD

January 14, 1964

STATINTL

[REDACTED] re: Measuring Techniques.

Bob, when I was in your office last December, we discussed briefly some measuring techniques. You mentioned you had received a proposal to use some mechanical property of quartz for submicron measurement of distance, I think it was. We didn't really have a chance to finish our conversation and I can't recall the details. As I remember, it sounded as though it might have some problems associated with obtaining glass of sufficient uniformity, but the idea was perhaps promising enough to look into.

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While your thinking about that, you might consider another possibility. [REDACTED] has proposed a device to, I think, [REDACTED] to develop a device to make submicron measurements. They plan to use a light beam of a Laser and since it is coherent they can count light waves. They didn't go into details, but they think they can get a least count of 0.15 microns. I'm sure [REDACTED] of [REDACTED] would give you the details if you asked him, and I think you should consider it.

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On the other hand, since [REDACTED] is already well into a program to measure with a least count of 0.25 microns, is it worth while investing in other investigative work? [REDACTED] also has an advantage of many ~~experience~~ years of experience in measuring and they have highly developed electronics which are stable and dependable. The electronics are probably 70% of the battle. Perhaps other work should only be under taken only if it shows promise of being considerably cheaper in its application to production machines and also retains the two significant features of the Telecomputing system: 1 i.e. non-ambiguity of count and no limitation of the traverse velocity.

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These are some thoughts I had on the subject. I can't answer the question I posed above, but I would be glad to discuss it with you next time we get together.

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January 14, 1964

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[REDACTED]

Some general comments on [REDACTED]

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They have a new General Manager at the [REDACTED] Division since [REDACTED] took over as Corporation President. His name is [REDACTED] and up to a few months ago he was production manager. He seems to be a capable straight forward type.

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[REDACTED] is leaving [REDACTED] next Friday. He is going to work at a communications outfit in [REDACTED]

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[REDACTED]

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[REDACTED] joined their engineering staff as Assistant Director under [REDACTED] I have known [REDACTED] for several years and he will be an asset to [REDACTED]

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[REDACTED] were considering doing the HTA/5 test and investigation work at Pacific Div which is in [REDACTED] if it comes in soon. My comment to them was that such a location would be too far away from their talent. They are also thinking of opening up an area at the North end of the [REDACTED] plant for this work. In my opinion that would be a very suitable location. It is near enough for easy access and yet is not encumbered by being in the direct flow of their production operations. Some facility preparation would be needed.

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The Controllable Development Processor is in full scale testing out on the floor. It is scheduled for about a 3 month test program and then presumably it will go to [REDACTED]

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[REDACTED]

Jan. 14

## STATINTL

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ea

Ther ATA/2 machine hooked  
has never been hooked  
up in Bldg 100A

This Dye must  
be handle 2.5 mil  
film to  
be useful. H.S.H.

is  
An added idler roller  
should be used only  
on a last resort.  
RCH

STATINTL

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Jan.

ABD-4 Roll Film Dryer

STATINTL

This is an air bearing dryer in which the bearings are all supplied from one blower and common plenum. The common plenum is divided into three sections for separate heat control. The bearing principle is similar to the HTA/5 but the air supply is different.

This dryer is for use on the existing HTA/2 and replaces the old desiccant dryer which was not moved from the old location.

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The dryer is complete and in final test. [REDACTED] is doing the testing. Jack says the machine is working fine except for tracking over one of the vacuum rollers. The first vacuum metering roller is working OK. It takes the film out of the Processing machine and meters it into the drying chamber. The air bearings are also alright. They are supplied by a 3 HP motor blower which delivers 1700 cfm at a pressure of 6 inches of water. This is adequate flow and pressure for drying.

The film then goes onto a polyurethane dancing roller which controls the speed of a second vacuum metering roller. This metering roller supplies the film to the take up spool which is driven by a torque motor. The two metering rollers regulate the film tension in the drying cabinet and prevent any collapsing of the air bearings. The tension on the film in the cabinet is so light that there is a problem of tracking over the second vacuum metering roller. Jack thinks he will have to put an idler roller between the dancing roller and the vacuum roller to provide adequate tension for good tracking.

It is expected that the ABD/4 will be the first wide film air bearing dryer in operation. The principles are sound and it should do an efficient job of drying. Some of the details of execution could be improved. I think the 3 separate heat controls are a needless complication and introduce some pressure losses in the inflow ducting.

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1-17-64  
The dryer is desiccant  
never been  
installed on the  
HTA/2 processor  
since it was  
moved to Bldg  
[REDACTED]

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Only on a  
first second  
1-17-64  
The dryer must be  
checked carefully for  
its ability to track  
and drive 2.5 mil  
film. If it can  
will be a big  
help in the HTA/5  
program.  
[REDACTED]

January 14, 1964

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*1-17-64  
conduct the  
program in  
the end of the  
plant. The location  
near discussed with  
the [redacted] with the  
HTA/5 on a test  
vehicle.  
BPA*

STATINTL

January 9, 1963

Digital Readout Comparator [redacted]

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[redacted] expected to deliver the first of the two systems before Christmas. In the last stages of final check-out however, they had difficulty with their parity check, particularly the vertical parity check.

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[redacted] the engineer and [redacted] the Technician discovered the problem from examination of the magnetic tape on which they were recording the output of the "send data lead".

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In order to examine the output, they record the outgoing pulses on the a tape recorder. They make the pulses on the tape visible by immersing it in an iron oxide solution made for the purpose by [redacted]

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The parity errors were difficult to trace and it took them quite a while to find the source of the problem. They finally found there were small variations in the voltage levels of the pulses on the send data lead due to small variations in the impedances of the circuits. The difficulty was corrected by rebiasing the drives.

STATINTL

[redacted] reemphasized that they cannot adequately check the performance of the error or acknowledge pulses to be received by the system from the computer because they don't have a dataphone. They are very anxious to be kept posted by the user on any problems that arise. They seem quite confident that the system will in general perform well and have a long and trouble free life.

The Company should be congratulated on their conscientious and thorough check out of the system. They are experienced and knowledgeable in digital counting systems and they seem to take extra interest in seeing that the equipment is right when it leaves their factory.

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The first system is completely shceked out and will be delivered to [redacted] next week. The second system is wired and they will start checkout on it next week. The second system should take about 2 weeks to check.

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January 9, 1963

## Linear Phasolver Measuring Engine

STATINTL [REDACTED]

5-8160

STATINTL [REDACTED]

STATINTL

STATINTL [REDACTED]

STATINTL

[REDACTED] of engineering made a presentation of the project to [REDACTED] and me. It was well organized and they were knowledgeable of all aspects.

The most critical aspect is getting [REDACTED] started on fabrication of a master driver pattern. This is delaying the job day by day and they are now 3 weeks behind the schedule submitted in the last progress report. The other parts of the program are going well. They believe they will have the drawings and the computer data to [REDACTED] by next week.

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STATINTL [REDACTED]

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STATINTL [REDACTED]

[REDACTED] had been over to look at the GIANT at [REDACTED] to determine if it would be suitable for installing a measuring engine as a follow on to the present work. By this summer, they are confident they will be demonstrating an absolute measuring capability of plus or minus 1 micron over 10 inches. It was [REDACTED] opinion that only the lower stage of [REDACTED] engine was rugged enough for their purpose. On the whole it did not appear that the GIANT would be suitable without extensive modification and it might be better to start from scratch.

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STATINTL [REDACTED]

STATINTL [REDACTED]

[REDACTED] felt that further work should be aimed at producing a prototype machine which could be put on trial as a production item in [REDACTED] shop. [REDACTED] stated he would formulate (with [REDACTED] help) the characteristics of such a machine and advise the vendor.

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STATINTL [REDACTED]

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